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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/692,753	10/19/2000	Jun Koyama	SEL 217	7729

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EXAMINER

TRAN, TAN N

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 07/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/692,753

Applicant(s)

KOYAMA ET AL.

Examiner

TAN N TRAN

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on amendment filed on 05/17/04.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5,7,11-13,16,23,25,27,32,34,36,43,47,51-57 and 65-80 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 51-57 is/are allowed.
- 6) ☒ Claim(s) 1,3,5,7,11-13,16,23,25,27,32,34,36,43,47 and 65-80 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 01/16/04; 03/22/04; 03/17/04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,12,13,16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahara et al. (4,523,189) in view of Yamazaki (6,522,319).

With regard to claims 1,3,5,7, Takahara et al. discloses a thin-film display device provides a gray scale display by controlling a period of time at which the EL element emits light in one frame period; the EL element comprise the first and second electrodes (111a,111c); and a potential of the first or the second electrode changes (111a,111c) in such a manner that a polarity of an EL driving voltage is changed for each one frame period, wherein the EL driving voltage is a different between the potentials applied to the first and second electrodes (111a,111c). (Note figs. 1,8(a)-8(c), and 10 of Takahara et al.).

Takahara et al. does not disclose a polarity of an driving voltage is inverted for each frame period, the active matrix-type display device comprises a time division gray-scale data signal generating comprising a plurality of thin film transistors over a substrate for dividing one frame period into a plurality of sub-frame periods.

However, Yamazaki discloses the active matrix-type display device comprises a polarity of an driving voltage is inverted for each frame period 200H, a time division gray-scale data

signal generating comprising a plurality of thin film transistors over a substrate for dividing one frame period into a plurality of sub-frame periods. (Note lines 54-60, column 29; lines 51-55, column 38; lines 22-25, column 20; lines 42,43, column 25, figs. 9,23 of Yamazaki).

Therefore, it would have been obvious to one of ordinary skill in the art to form the Takahara et al.'s device having the active matrix-type display device comprises a polarity of an driving voltage is inverted for each frame period, a time division gray-scale data signal generating comprising a plurality of thin film transistors over a substrate for dividing one frame period into a plurality of sub-frame periods such as taught by Yamazaki in order to prevent the liquid crystal from being adversely affected.

With regard to claim 12, Takahara et al. and Yamazaki disclose all the claimed subject matter except for the light emission of the plurality of EL elements is controlled with the digital data signal input to the switching TFT because such structure is conventional in the art for forming a plurality of pixels having the light emission of the plurality of EL elements is controlled with the digital data signal input to TFT in order to display the image. (Note figs. 1 and 2(a) of Kimura et al. do teach the light emission of the plurality of EL elements 164 is controlled with the digital data signal input to the switching TFT 131) are cited to support for the well know position.

With regard to claim 13, Takahara et al. and Yamazaki disclose all the claimed subject matter except for one frame period is 1/120 s or less. However, it would have been obvious to one of ordinary skill in the art to recognize that one frame period of Takahara et al. and Yamazaki's device having period is 1/120 s or less because such structure (Fig. 9) of Yamazaki

formed the same that of applicant, so the structure of Yamazaki has the same driving voltage in applicant's structure.

With regard to claims 16, Takahara et al. and Yamazaki disclose all claimed invention as in claim 1, except the active matrix-type display device is incorporated in one group consisting of a video camera, a digital camera, a head-mount display, a car navigation system, a personal computer, and a DVD player. However, although Takahara et al. and Kimura et al. do not teach exact the type of the active matrix-type display device as that claimed by Applicant, the type differences are considered obvious design choices and are not patentable unless unobvious or expected results are obtained from these changes. It appears that these changes produce no functional differences and therefore would have been obvious. Note in re Leshin, 125 USPQ 416.

Claims 3,5,7,11,23,25,27,32,34,36,43,47,65-80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahara et al. (4,523,189) in view of Kimura et al. (2001/0054991) and further in view of Yamazaki (6,522,319).

With regard to claims 3,5,7, Takahara et al. discloses a thin-film display device provides a gray scale display by controlling a period of time at which the EL element emits light in one frame period; the EL element comprise the first and second electrodes (111a,111c); and a potential of the first or the second electrode changes (111a,111c) in such a manner that a polarity of an EL driving voltage is changed for each one frame period, wherein the EL driving voltage is a different between the potentials applied to the first and second electrodes (111a,111c). (Note figs. 1,8(a)-8(c), and 10 of Takahara et al.).

Takahara et al. does not disclose an active matrix-type display device comprising a plurality of pixels including a plurality of EL elements, a plurality of EL driving TFTs for controlling light emission of the plurality of EL elements, a plurality of switching TFTs for controlling a driving of the plurality of EL driving TFTs and adjacent pixels of the plurality of pixels share a power source supply line for supplying a voltage applied to the second electrode; a first insulating film formed over the EL driving thin film transistor and the switching thin film transistor; a second insulating film formed on a portion of the first insulating film, an EL element comprising a first electrode formed on the first insulating film.

However, Kimura et al. discloses an active matrix-type display device comprising a plurality of pixels including a plurality of EL elements 164 wherein each of element comprising the first electrode 165 and second electrode 152, a plurality of EL driving TFTs 132 for controlling light emission of the plurality of EL elements 164, a plurality of switching TFTs 131 for controlling a driving of the plurality of EL driving TFTs 132 and adjacent pixels of the plurality of pixels share a power source supply line 123 for supplying a voltage applied to the second electrode 152, a first insulating film 162 formed over the EL driving thin film transistor 132 and the switching thin film transistor 131; a second insulating film 163 formed on a portion of the first insulating film 162, an EL element 164 comprising a first electrode 152 formed on the first insulating film 162. (Note figs. 1,2(a) of Kimura et al.).

Therefore, it would have been obvious to one of ordinary skill in the art to form the Takahara et al.'s device having an active matrix-type display device comprising a plurality of pixels including a plurality of EL elements, a plurality of EL driving TFTs for controlling light emission of the plurality of EL elements, a plurality of switching TFTs for controlling a driving

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of the plurality of EL driving TFTs and adjacent pixels of the plurality of pixels share a power source supply line for supplying a voltage applied to the second electrode; a first insulating film formed over the EL driving thin film transistor and the switching thin film transistor; a second insulating film formed on a portion of the first insulating film, an EL element comprising a first electrode formed on the first insulating film such as taught by Kimura et al. because such structure is conventional in the art for forming a plurality of pixels in order to display the image.

Takahara et al. and Kimura et al. disclose all the claimed subject matter except for a polarity of an driving voltage is inverted for each frame period, the active matrix-type display device comprises a time division gray-scale data signal generating comprising a plurality of thin film transistors over a substrate for dividing one frame period into a plurality of sub-frame periods.

However, Yamazaki discloses the active matrix-type display device comprises a polarity of an driving voltage is inverted for each frame period 200H, a time division gray-scale data signal generating comprising a plurality of thin film transistors over a substrate for dividing one frame period into a plurality of sub-frame periods. (Note lines 54-60, column 29; lines 51-55, column 38; lines 22-25, column 20; lines 42,43, column 25, figs. 9,23 of Yamazaki).

Therefore, it would have been obvious to one of ordinary skill in the art to form the Takahara et al. and Kimura et al.'s device having the active matrix-type display device comprises a polarity of an driving voltage is inverted for each frame period, a time division gray-scale data signal generating comprising a plurality of thin film transistors over a substrate for dividing one frame period into a plurality of sub-frame periods such as taught by Yamazaki in order to prevent the liquid crystal from being adversely affected.

With regard to claims 72,76, Takahara et al. and Kimura et al. disclose all the claimed subject matter except for a first insulating film transistor made of a resin material. However, it would have been obvious to one of ordinary skill in the art to form a first insulating film transistor made of a resin material in order to secure the cover of gate wiring in the EL thin film transistor. Note (lines 1,2, paragraph 0125, page 6, figs. 4D,5A of Ohtani et al. (2002/0000613)) is cited to support for the well-know position.

With regard to claims 65,69,70,78,79, Takahara et al., Yamazaki and Kimura et al. disclose all the claimed subject matter except for a potential of the second electrode is held constant and a potential of the first electrode changes wherein the first electrode or second electrode is either cathode or anode. However, it would have been obvious to one of ordinary skill in the art to form a potential of the second electrode is held constant and a potential of the first electrode changes wherein the first electrode or second electrode is either cathode or anode because it is conventional in the art for forming the anode electrode and cathode electrode in the EL element in order to obtain the changes of EL driving voltage.

With regard to claim 11, Takahara et al., Yamazaki and Kimura et al. disclose all the claimed subject matter except for the EL driving TFT and the switching TFT comprises either an n-channel type or p-channel type TFT. However, it would have been obvious to one of ordinary skill in the art to form the EL driving TFT and the switching TFT comprises either an n-channel type or p-channel type TFT because it is conventional in the art for semiconductor interchange the n-type to the p-type semiconductor.

With regard to claims 23,25,27, Kimura et al. discloses the light emission of the plurality of EL elements 164 is controlled with the digital data signal input to the switching TFT 131. (Note figs. 1 and 2(a) of Kimura et al.).

With regard to claims 32,34,36,66,73, Takahara et al., Yamazaki and Kimura et al. disclose all the claimed subject matter except for one frame period is 1/120 s or less. However, it would have been obvious to one of ordinary skill in the art to form one frame period is 1/120 s or less because such structure (Fig. 1) of Kimura et al. is formed the same that of applicant, so the structure of Kimura et al. has the same EL driving voltage in applicant's structure.

With regard to claims 43,45,47,71,80, Takahara et al., Yamazaki and Kimura et al. disclose all claimed invention as in claim 1, except the active matrix-type display device is incorporated in one group consisting of a video camera, a digital camera, a head-mount display, a car navigation system, a personal computer, and a DVD player. However, although Takahara et al. and Kimura et al. do not teach exact the type of the active matrix-type display device as that claimed by Applicant, the type differences are considered obvious design choices and are not patentable unless unobvious or expected results are obtained from these changes. It appears that these changes produce no functional differences and therefore would have been obvious. Note in re Leshin, 125 USPQ 416.

With regard to claims 68,75, Takahara et al., Yamazaki and Kimura et al. disclose all the claimed subject matter except for the organic EL material comprises a polymer organic material selected from the group consisting of PPV, PVK, and polycarbonate. However, it would have been obvious to one of ordinary skill in the art to form the organic EL material comprises a polymer organic material selected from the group consisting of PPV, PVK, and polycarbonate

in order to increase the luminance of emission of light from the organic fluorescent material. Note (lines 38-40, column 2 of Kimura (6,529,178)) is cited to support for the well-know position.

With regard to claims 67,74, Takahara et al., Yamazaki and Kimura et al. disclose all claimed invention, except the organic EL material comprises a low molecular organic material selected from the group consisting of Alq₃, and TPD. However, although Takahara et al. and Kimura et al. do not teach exact the material of the organic EL material as that claimed by Applicant, the material differences are considered obvious design choices and are not patentable unless unobvious or expected results are obtained from these changes. It appears that these changes produce no functional differences and therefore would have been obvious. Note in re Leshin, 125 USPQ 416.

With regard to claim 77, Takahara et al., Yamazaki and Kimura et al. disclose all the claimed subject matter except for the second insulating film made of an organic resin. However, it would have been obvious to one of ordinary skill in the art to form the second insulating film made of an organic resin material in order to secure the cover of gate wiring in the EL thin film transistor. Note (lines 1,2, paragraph 0166, page 8, figs. 4D,5A of Ohtani et al. (2002/0000613)) is cited to support for the well-know position. Takahara et al. and Kimura et al. disclose all claimed invention, except the second insulating film made of silicon oxide, silicon nitride oxide. However, although Takahara et al. and Kimura et al. do not teach exact the material of he second insulating film as that claimed by Applicant, the material differences are considered obvious design choices and are not patentable unless unobvious or expected results are obtained from

these changes. It appears that these changes produce no functional differences and therefore would have been obvious. Note in re Leshin, 125 USPQ 416.

Allowable Subject Matter

2. Claims 51-57 allowable over the prior art of record because none of these references disclose or can be combined to yield the claimed invention such as a driver circuit comprising a plurality of first thin film transistors and a time division gray-scale signal generating circuit comprising a plurality of second thin film transistors over the substrate for dividing one frame period into a plurality of sub-frame periods as recited in claim 51.

Response to Amendment

3. Applicant's arguments with respect to claims 1,3,5,7,11-13,16,23,25,27,32,34,36,43,47,65-80 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the

mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

5. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Tan Tran whose telephone number is (571) 272-1923. The examiner can normally be reached on M-F 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for after final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

TT

Jul 2004


Minhloan Tran
Primary Examiner
Art Unit 2826